Minolta
Minolta
Hi-matic 9
Service Manual
MINOLTA CAMERA CO., LTD.

Introduction

This service manual consists of two chapters, namely (1) Disassembly and (2) Reassembly. The chapter of reassembly describes about inspection or care to be observed when reassembling the camera and about the points to be checked after being reassembled. The descrip tion is made step by step conforming with the sequential steps of reassembly so that even a beginner may understand and carry out reassembly of the camera only if he reads this manual thoroughly and carefully. Wer are very grateful if this service manual may be of your help in you disassembly and reassembly works.

The reference numerals refered in this service mannual correspond to those desingnating the parts listed in the list of the parts of the camera which has been already sent to you.

When you order for necessary parts of the camera, please refer to he reference numerals designating those parts list and address to ;

Service Section, Service Department
Minolta Camera Company Ltd.,
No. 18, 4-chome, Shiomachi-dori,
Minami-ku, Osaka-shi,
Japan.

We shall be much obliged if you could send us your opinion regarding to the contents of this serivce manual.

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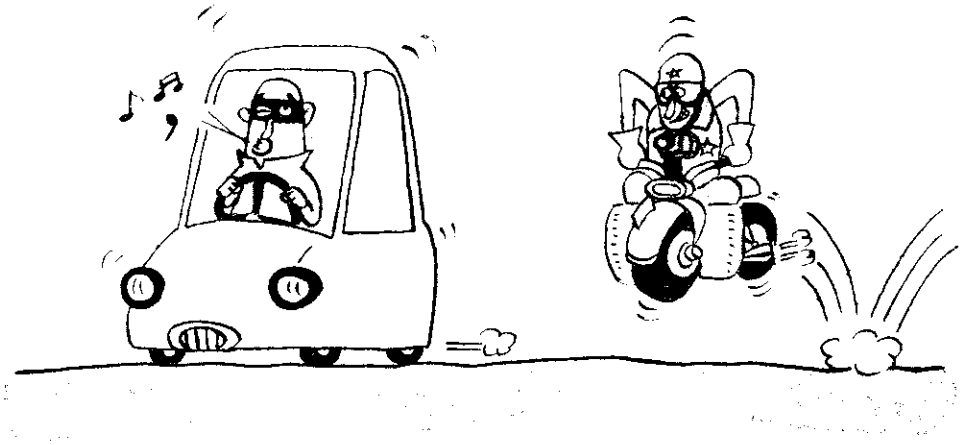

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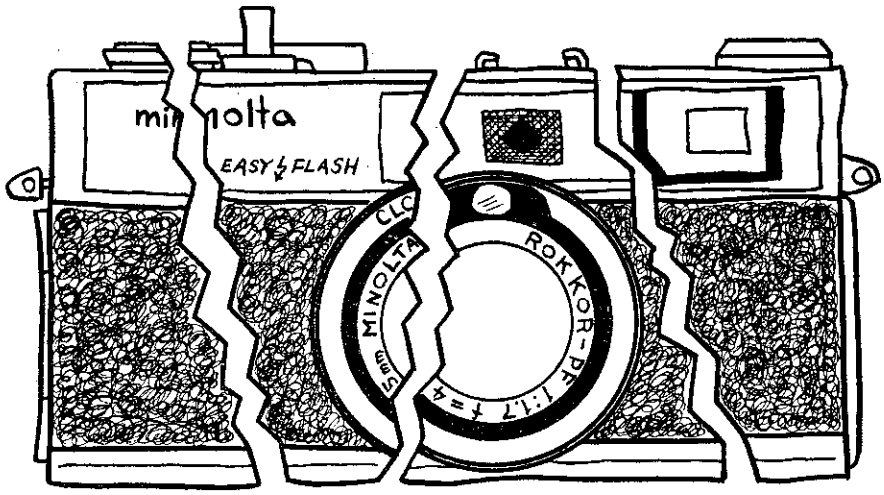
DIASSEMBLY SECTION



A. Disassembly of the top cover

1. When the lock plate(1108)is pulled up, the back cover is opened.
2. Insert in to the split groove of the rewinding shaft (3101 set) the fulcrum point of the pincette so as to loosen the rewinding knob (3101 set) and take off the rewinding shaft and the rewinding knob also the rewinding shaft washer(3070)
3. Take out the top cover nut(1019) and the winding lever setsrew(3021) so that the winding lever(3009) and the lever washer(3007) may be taken out.
4. Loosen and take off two setscrews(B71-2×2.5), and disconnect the soldered portion of one lead wire(green color) fixed on the top cover(1002). Then, pull out the top cover.

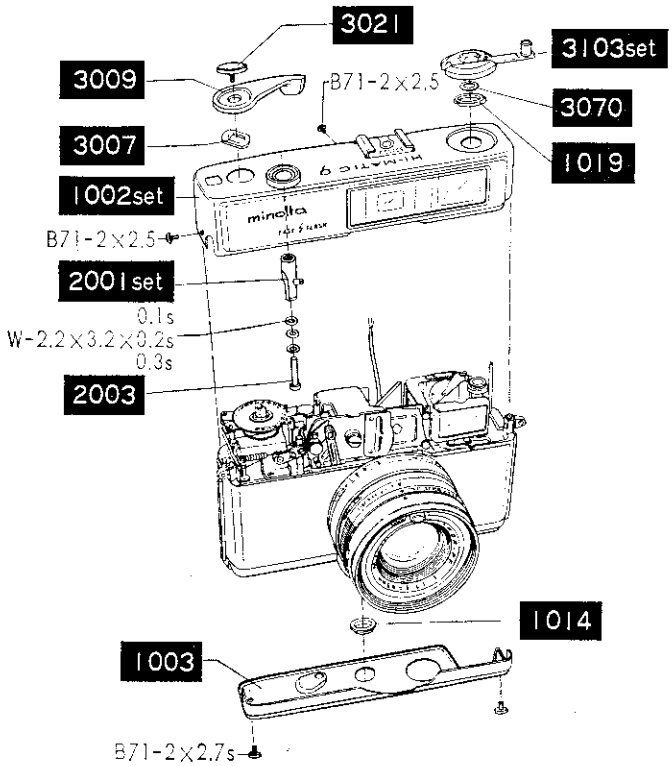
Caution : when the top cover is pulled out, the shutter button(2001 set), the washer (w-2.2×3.2), and the release axis (2003) may be disconnected so that care should be taken not to lose them.

B. Disassembly of the bottom cover

1. Loosen and take out two setscrews(B71-2×2.7s) and take out the bottom cover(1003).

Caution : when the bottom cover is taken out, the tripod socket cover (1014) may be also taken out so that care should be taken not to lose this part.

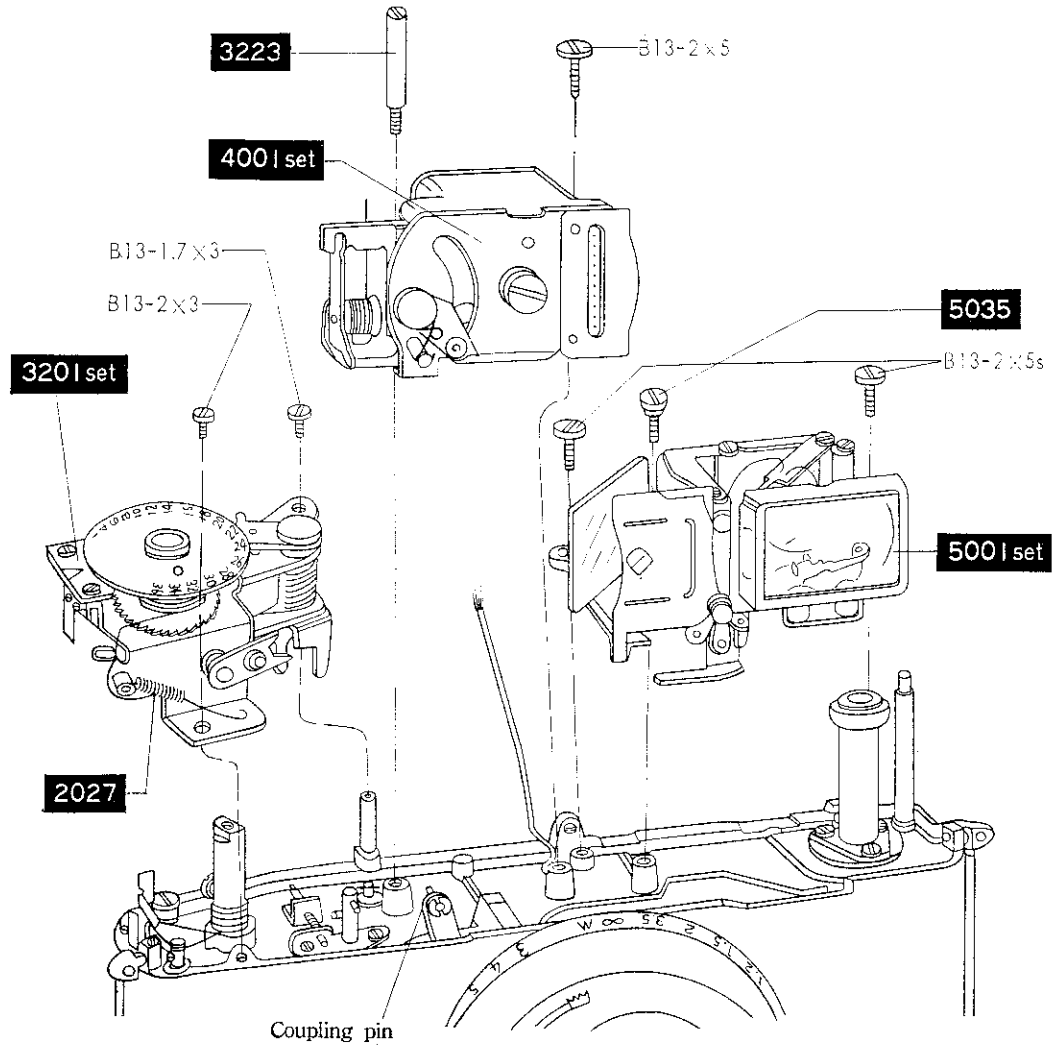
Fig. 1



C. Dismounting of the counter base plate, range-finder, and exposure meter

1. Release the clamp of the release lever spring(2027), loosen and taken out one setscrew (B13-2×3) and one setscrew(B13-1.7×3) and take out the counter base plate(3201 set).
2. Loosen and take out two setscrews(B13-2×5s) and one setscrew(5035) so as to take out the range-finder(5001 set).
3. Disconnect the soldered portions of four lead wires(yellow, red, blue and black) of the semi-fixing resistor.
4. Loosen and take out one setscrew(B13-2×5) and take out the support axis(3223) so as to pull out the EV lever pin(2091) and take out the exposure meter base plate(4001 set).

Fig. 2

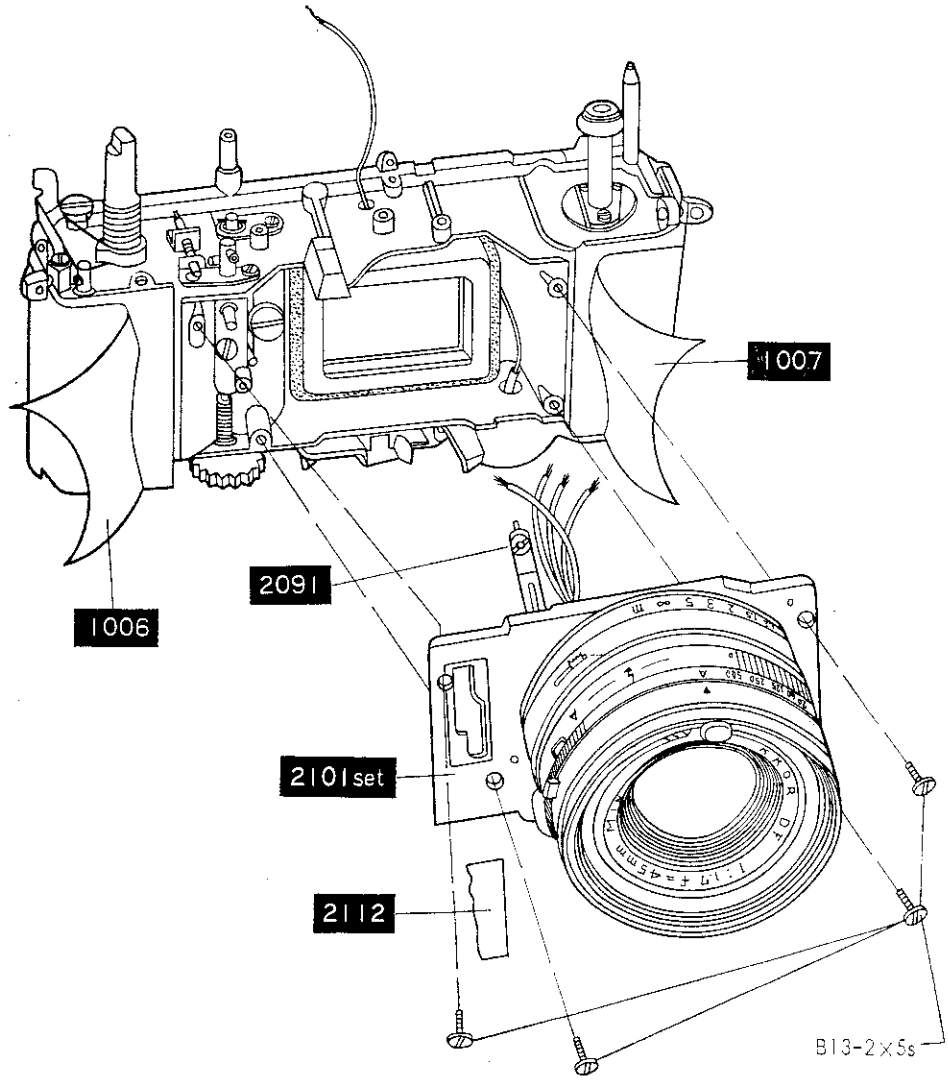


D. Dismounting of helicoid base plate

1. Take out the top and bottom covers. (See P. 4)
2. Peel off the front leather-L(1006) and the front leather-R(1007) and also peel off the front cover plate(2112).
3. Release the clamp of the pulling lever spring(2086) from the spring receiver(2088). Then, loosen and taken out four setscrews(B13-2×5s), pull out the EV lever pin(2091) from the joint lever pin bush(4019) and take out the front base frame(2101 set) from the camera body.

Caution : In some cases difficulty will be caused in taking off the front base frame because of adhesiveness of leather paste.

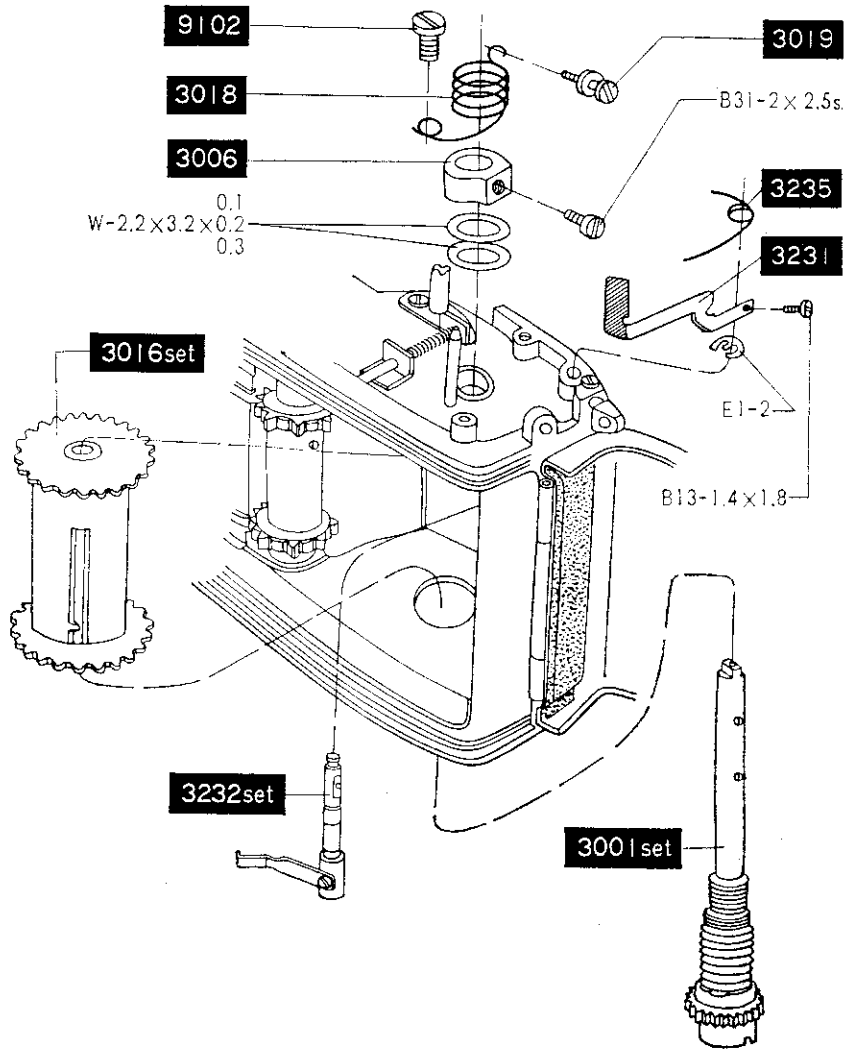
Fig. 3



E. Disassembly of the film take-up spool

1. Take out the top and bottom cover. (Sees P. 4)
2. Take out the counter base plate. (See P. 5)
3. Take out the spring setscrew(9102) and the returning spring screw-A(3019) so as to dismount and take out the returning spring(3018).
4. Loosen and take out one setscrew(B31-2×2.5s) of the winding bush stopper(3006) so as to take out the winding bush stopper. Then pull out two adjustment washers(W-2.2×3.2×(0.1, 0.2, 0.3)) attached to the winding shaft(3001 set).
5. Pull out from the bottom of the camera the winding shaft(3001 set) and then open the back cover so as to take out the take-up spool(3016 set).
6. Take out one setscrew(B13-1.4×1.8), the film signal lever(3231) and the signal lever spring(3235) and then pull out the coupling washer(E1-2). Then the film signal axis (3232 set) may be taken out downwardly.

Fig. 4



F. Disassembly of the sprocket

1. Take out the top and bottom covers. (See P. 4)
2. Take out the counter base plate. (See P. 5)
3. Expose the bottom of the camera body and take out the release lever spring(3083), the release lever axis(3082), the sprocket release lever(3081), and the washer(W-2.1×6×0.3) and also the release lever spring screw(3084).
4. Loosen and take out the reversal axis(3096) (left hand screw), and also the reverse stop lever(3097), the idle gear axis(3095) (left hand screw), the idle gear(3094), and the washer(4.2×5.8×0.3).
5. Pull out the rollpin(3219), loosen and take out one setscrew(B13-2×2.4) and the sprocket bearing-A holder(3045 set). Then, take out of the camera the sprocket axis spring(3049) and the washer(W-2.4×6×0.3).
6. Open the back cover and take out from the small hole of the sprocket(3041) the sprocket axis screw(3042).
7. Pull out downwardly the sprocket axis(3047 set) and also take out the sprocket axis bearing-B(3048) so that the sprocket(3041 set) may be taken out.

Caution : When the release lever axis(3082) is dismounted, the release lever spring (3083) is also taken out together with the release lever axis.

Fig. 5

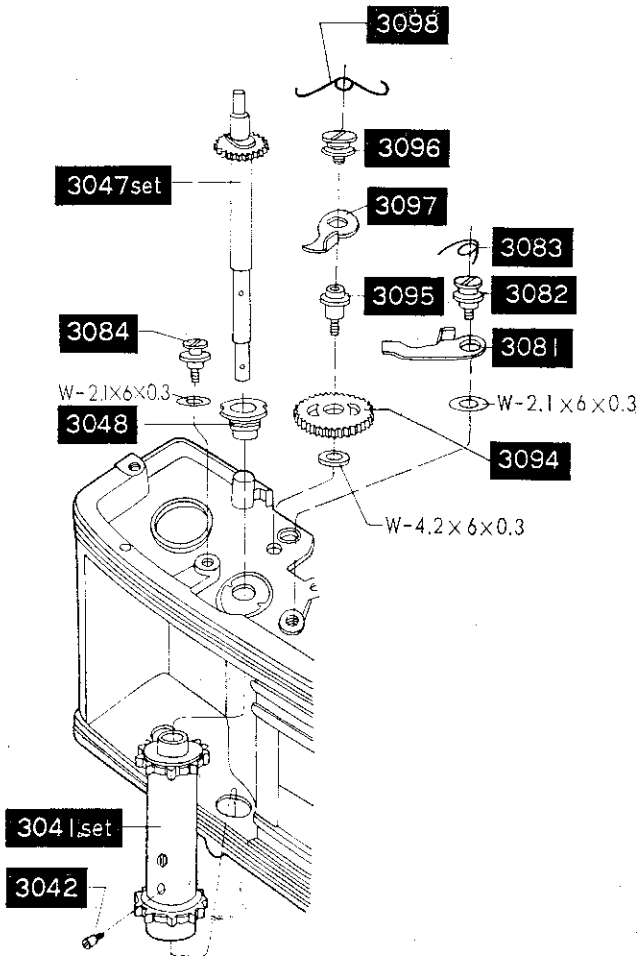
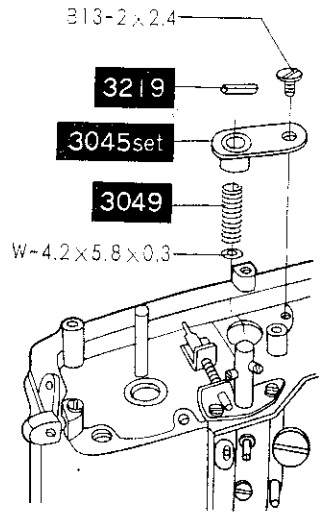


Fig. 6



G. Diassembly of the outer fitting of the lens barrel

1. Take out the accessory nut ring(2120) by utilizing a specially provided tool(17L-2120-76) and loosen the setscrew(9107) located on the back surface of the CdS holder(4102 set) so that the lead wire may be taken out.
   Then, shift the vynyl pipe(4039) and disconnected the soldered portion of the lead wire so that the CdS holder(4102 set).
2. Take out the light shield ring(2122) and the switch knob cover(2121).
3. Disconnect the three soldered portions of the filter ring(2115 set) and take out two set-screws(B11-2×2.5), the screw stopper(9108) and pull out the vynyl pipe(4039) from the lead wire and then take out the filter ring (2115 set).
4. Take out the speed ring(2127) and the diaphragm ring(2126).

Fig. 7

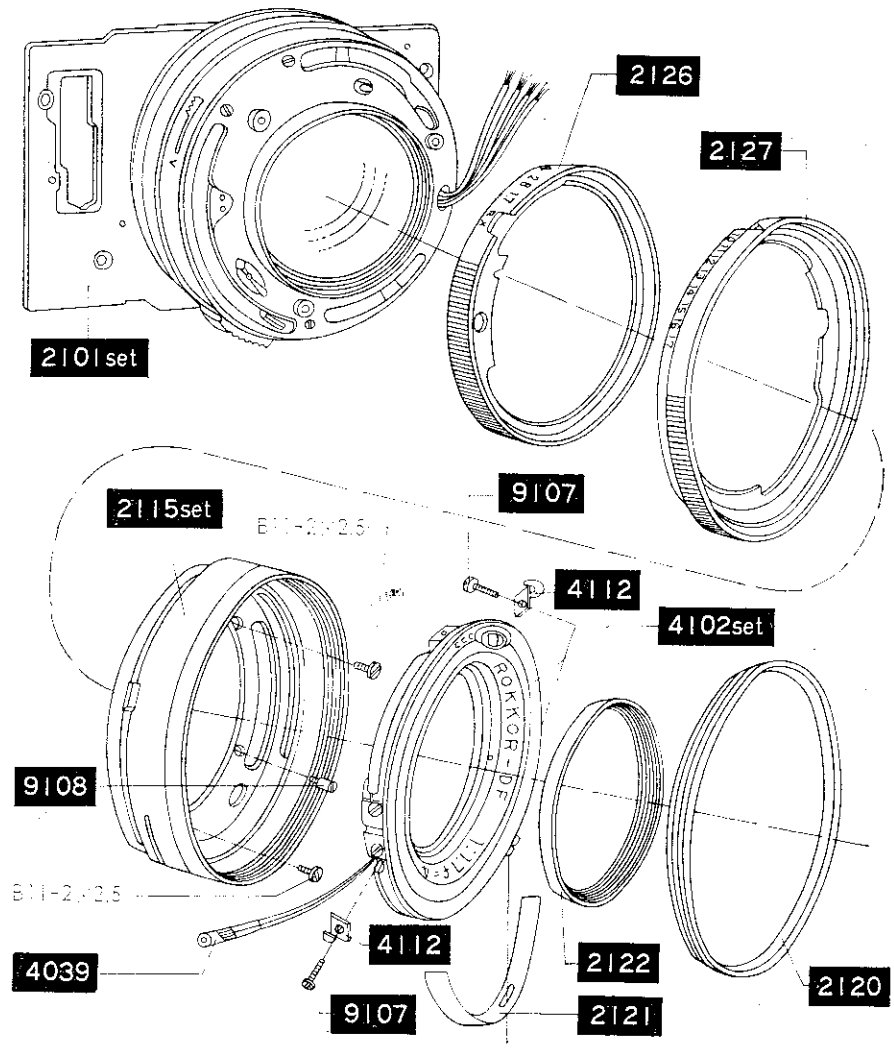
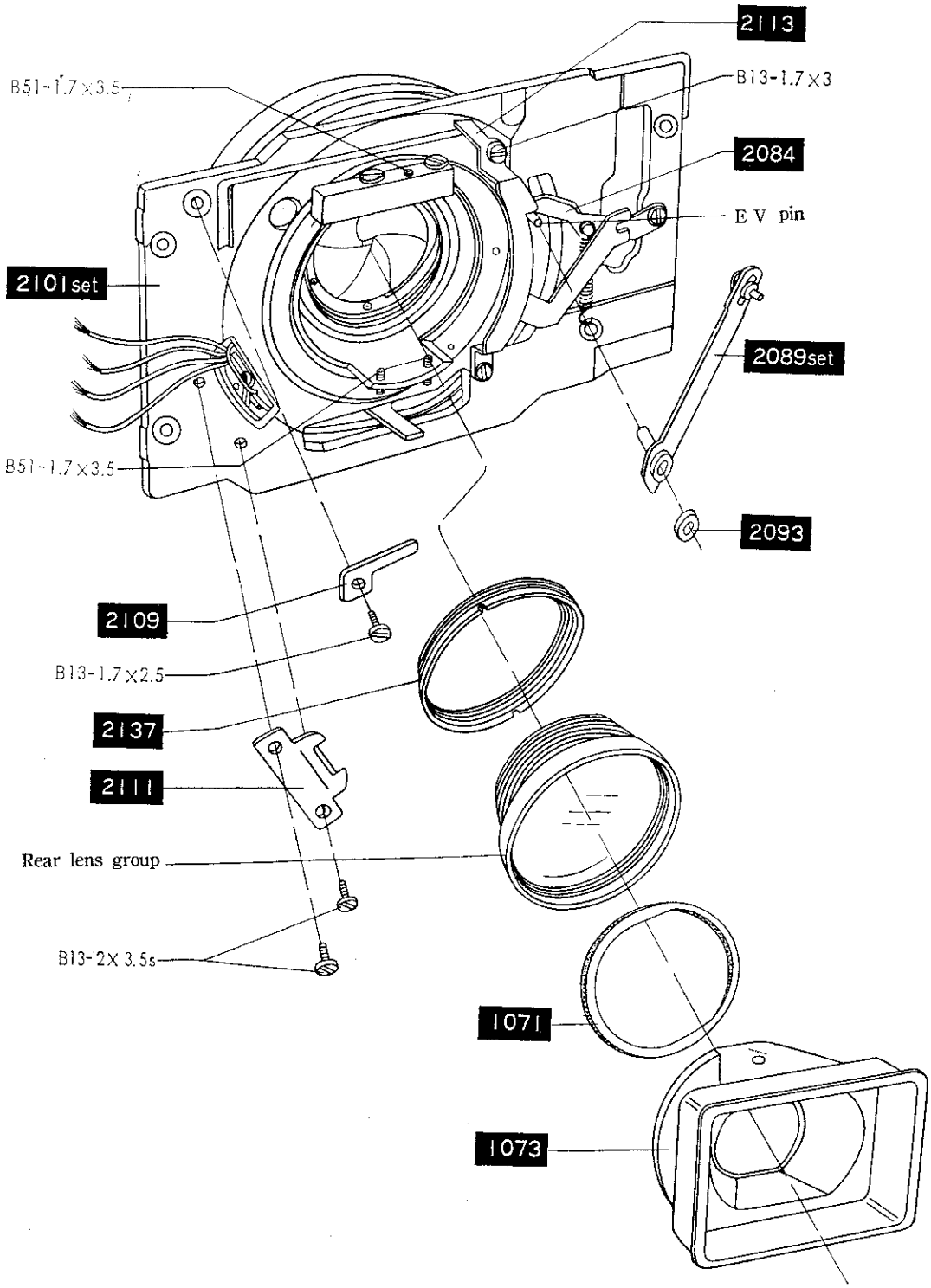


Fig. 8

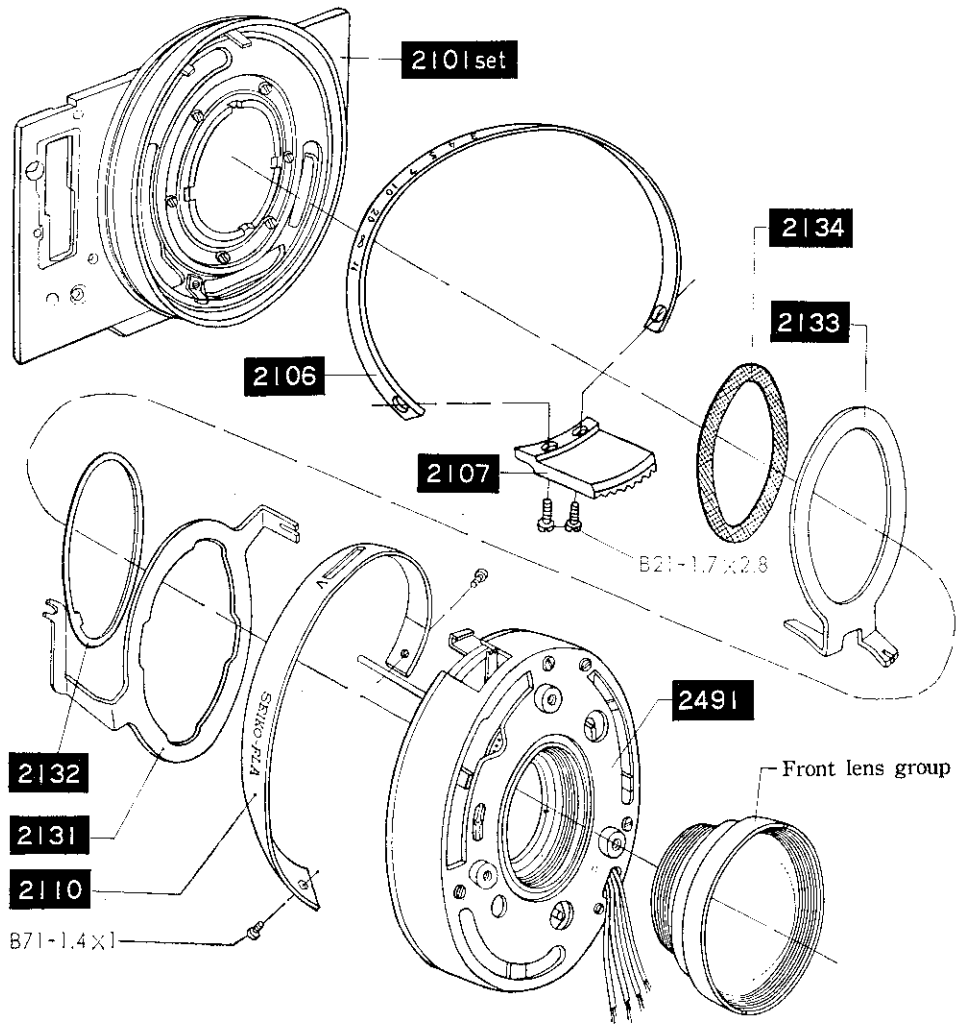

2113
B51-1.7×3.5
B13-1.7×3
2084
E V pin
2101set
2089set
B51-1.7×3.5
2093
2109
B13-1.7×2.5
2137
2111
Rear lens group
B13-2×3.5s
1071
1073

H. Dismounting of the shutter mechanism

1. Take off the outer fitting of the lens barrel. (See P. 9)
2. Take off the helicoid base frame. (See P. 6).
3. First, take out the front lens group and loosen and take out one setscrew(B51-1.7×3.5) located at the upper portion of the backside of the front base frame(2101 set) and two setscrews(B51-1.7×3.5) located the lower portion of the same. Thereafter, take out the rear lens group.
4. Loosen and take out two setscrews(B13-2×3.5s), the helicoid guide plate(2111) and the shutter nut(2137). Then, loosen one setscrew(B13-1.7×2.5) of the cord presser(2109) and one setscrew(B13-1.7×3) located below the pulling lever receiver(2113) so that the lead wire may be taken out. Then, take out the lead wire may be taken out. Then, take out the shutter(2491) and also the release ring(2131), release ring washer(2132), charge ring (2133) and teflon washer(2134).
5. Loosen and take out two setscrews(B71-1.4×1) and take out the decoration plate(2110).
6. Loosen and take out two setscrews(B21-1.7×2.8) so that the focusing knob(2107) and the distance scale(2106) may be taken out of the helicoid ring(2105).

Caution : When the shutter is taken out of the helicoid set(2102 set), the EV lever(2089 set) and the EV axis roller(2093) are also taken out of the camera so that care should be taken not to lose them during disassembly.

Fig. 9

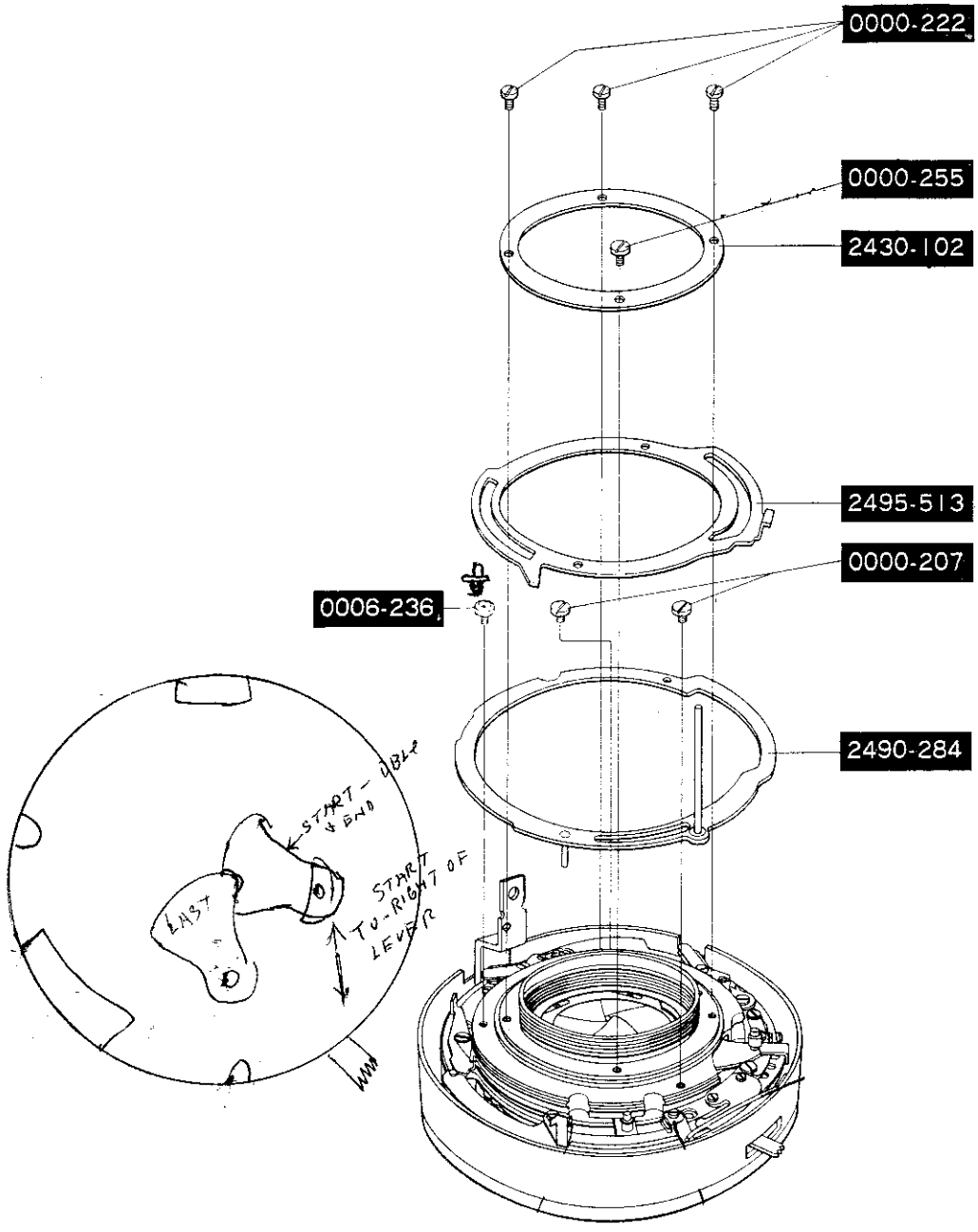


I. Diassembly of the back portions of theshutter mechanism

The structure of the shutter of Minolta Hi-Matic 9 is almost similar to that of Minolta Hi-Matic 7 so that only the differences between two camara will be described.
First, place the back side of the shutter so as to face upwardly.

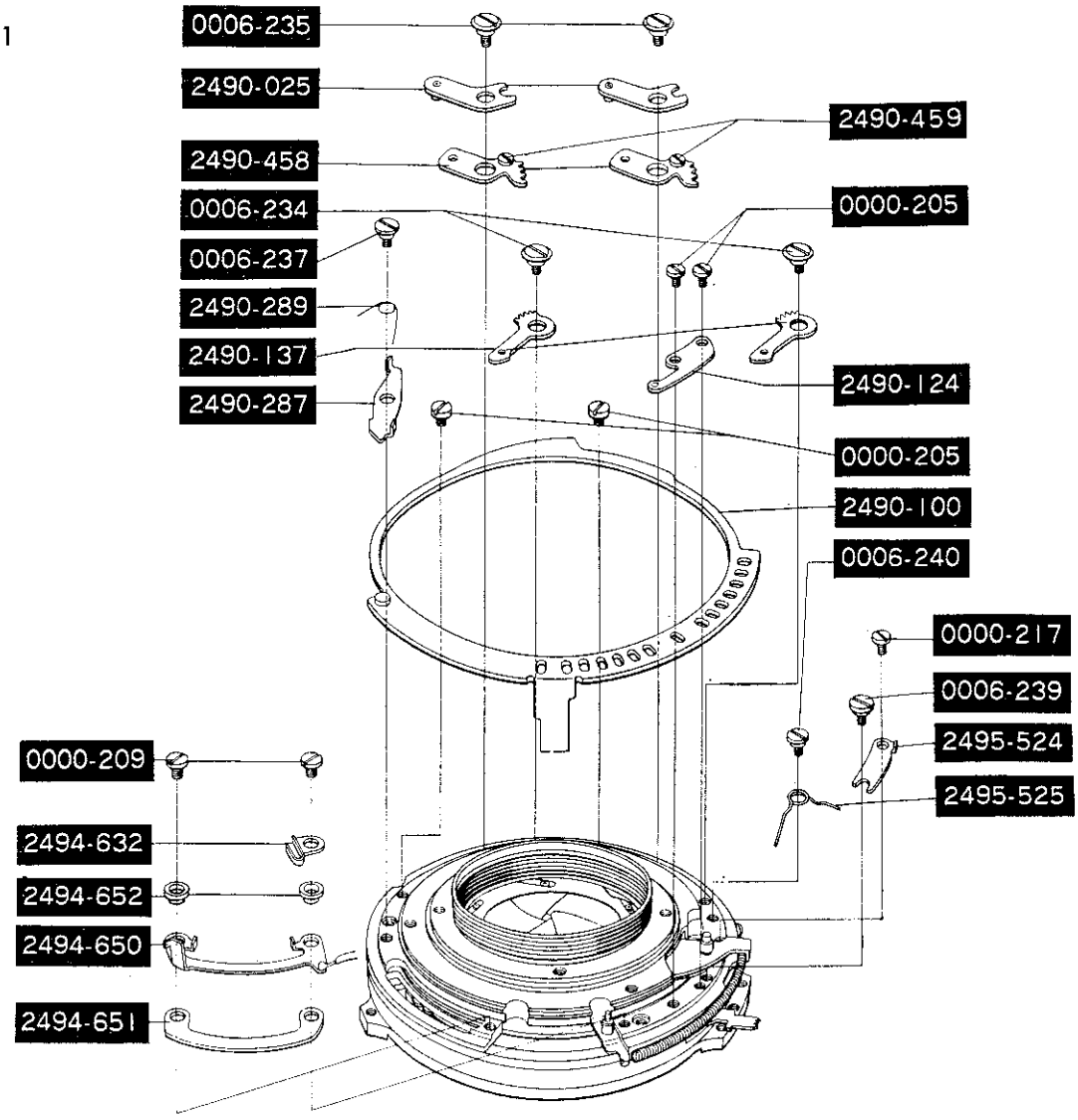
1. Take out one ring retainer setscrew-B(0000255), three ring retainer setscrew-A(0000222) and then the adjustment ring retainer(2430102).
2. Mark to the between the shutter casing (2490003) and the distance adjustment ring (2495513) and then take out the adjustment ring.
3. Take out one EV ring setscrew-A(0006236) and two EV ring setscrew-B(0000207) and mark to the between the shutter casing(2490003) together with the EV regulating ring (2490284) and then take out the latter.

Fig. 10

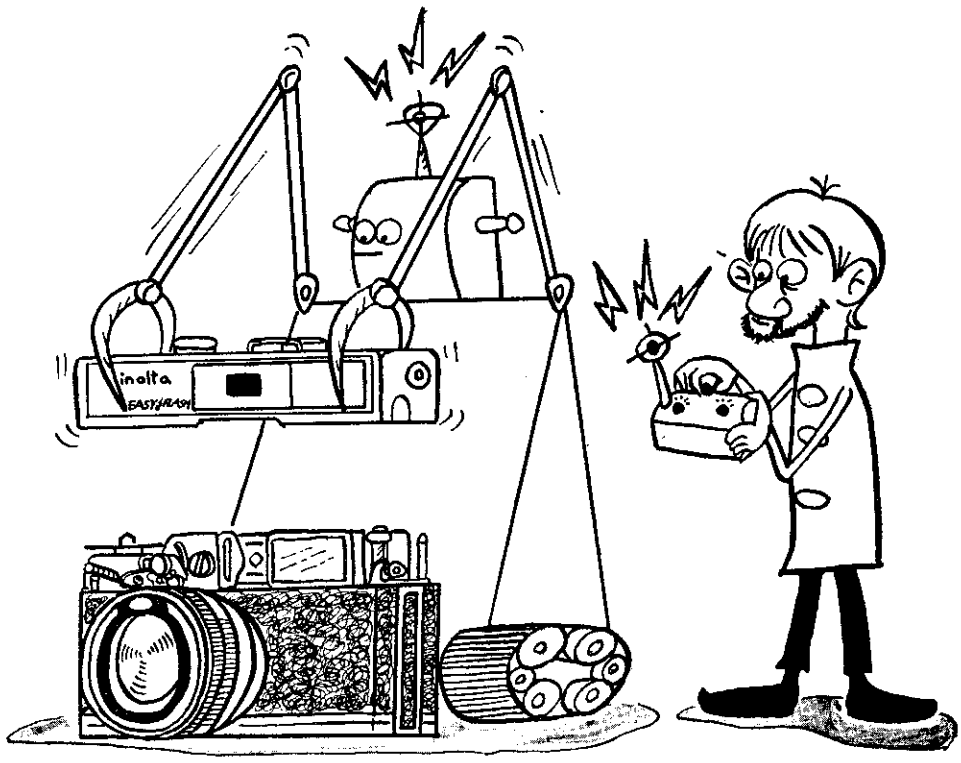


4. Take out two switch plate setscrews(0000209) and take out the subsidiary switch plate (2494632) with sufficient care so as not to deform this part.
5. Take out the F.M. signal switch plate(2494650) and the insulate plate(2491651). When the signal switch plate(2494650) is taken out, the insulate pipe(2494652) is taken out at the same time.
6. First take out the lock lever screw(0006237) and then the actuating lever-B(2490458) and the actuating lever-A(2490025).
7. First take out the actuating lever setscrew(0006235) and then the actuating lever-B (2490458) and the actuating lever-A(2490025) (two positions). F.M. aperture diameter adjustment of the eccentric pin(2490459) has been finished so that this part must not be rotated.
8. First take out the actuating lever setscrew (0006234) and then the actuating lever (2490137). (two positions).
9. First take out the spring setscrew(0006240)and then the supporting plate(2495521).
10. First take out the scanning lever(0006239) and the supporting plate setscrew(0000217) and then the supporting plate(2495524).
11. Loosen and take out two regulating ring setscrews(0000205) and then the click spring (2490124).
12. Loosen and take out two regulating ring setscrews(0000205) and then the diaphragm regularing ring(2490100).

Fig. 11

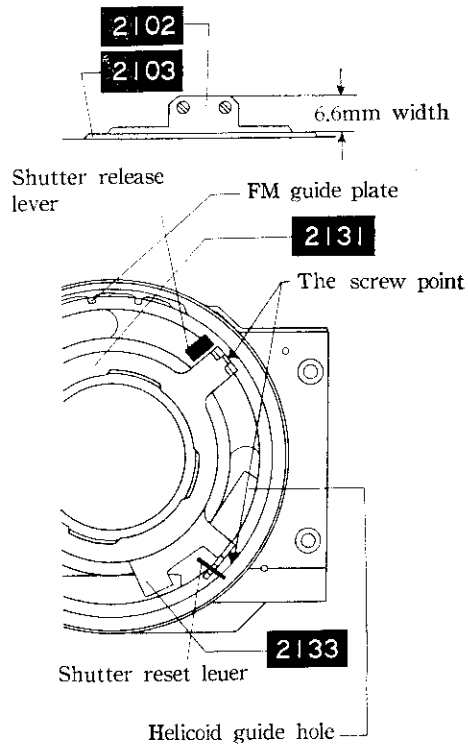


REASSEMBLY SECTION



J. Reassembly of the shutter mechanism

Fig. 12



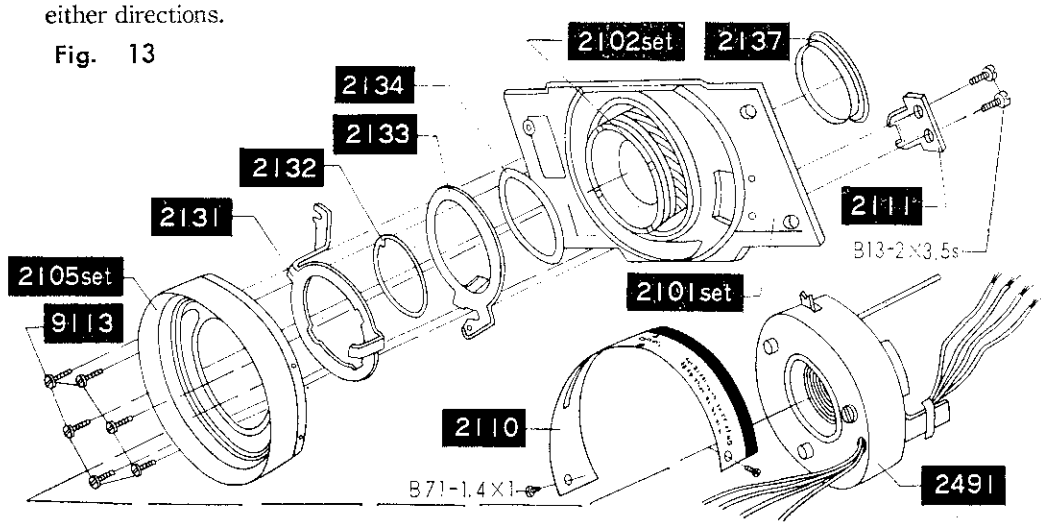
1. To the front base frame(2101) is fixed the helicoid set. The helicoid ring(2105) and the helicoid holder(2104) are screwed in position by six setscrews. (9113).
2. Set the helicoid ring(2105) to infinity(∞) and turn the helicoid-B(2103), little by little, until the heights of the helicoid-A (2102) and the helicoid-B (2103) may become 6.6mm as shown in the figure right. Then, tighten the setscrew(9913) and in this case, the por tion having three holes of the holicoid-A(2102) must be directed upwardly.
3. Into the helicoid-A (2102), the teflon washer(2134), the charge ring(2133), the release ring washer(2132) and the release ring (2131) are fitted in the order mentioned. In this case, the projecting portion of the release ring washer(2132) may be engaged with any grooves provided in the helicoid-A(2102).
4. To the front plate(2490-008) of the shutter is fixedly secured the decoration plate(2110) by means of two setscrews(B71-1.4×1).
5. Set the helicoid ring(2105) to infinity(∞) and also set the release ring(2131) and the charge ring(2133) to positions illustrated in the right figure. This is the easier manner to mount such parts into the shutter mechanism.
6. Turn the focusing or range ring(2495-513) to the full extent until it is stopped in the counter-clockwise direc tion viewed from the backside of the shutter. Strand four lead wires into one strand of lead wires and, then insert this strand through the side of receiving hool of the helicoid guide plate(2111).
7. Fit the distance adjusting ring(2495513) of shutter part into FM guide plate(2124) and also insert the cocking ring(2491-001) into the cut-off recess of the charge ring(2133). Then, four shutter positioning setscrews-A, B(0000222), (0000225) are fitted into four points grooves of the helicoid-A(2102) for mounting the parts into the shutter and then tightened securely by means of the shutter nut(2137).
8. After confirming that the focusing guide plate(2490356) is fixedly secured, fit the helicoid guide plate(2111) into the front base frame(2101) and hold it in position by two set-screws(B13-2×3.5s)

Check points to be confirmed after reassembling the shutter

* After reassembly of the shutter, try a few times for setting and releasing the shutter in order to check if the aperture sectors be normally actuated.

* Set the shutter speed ring(2127) and diaphragm ring(2126) to out of AA position and check if the aperture diameter will be changed when the focusing knob is rotated in either directions.

Fig. 13



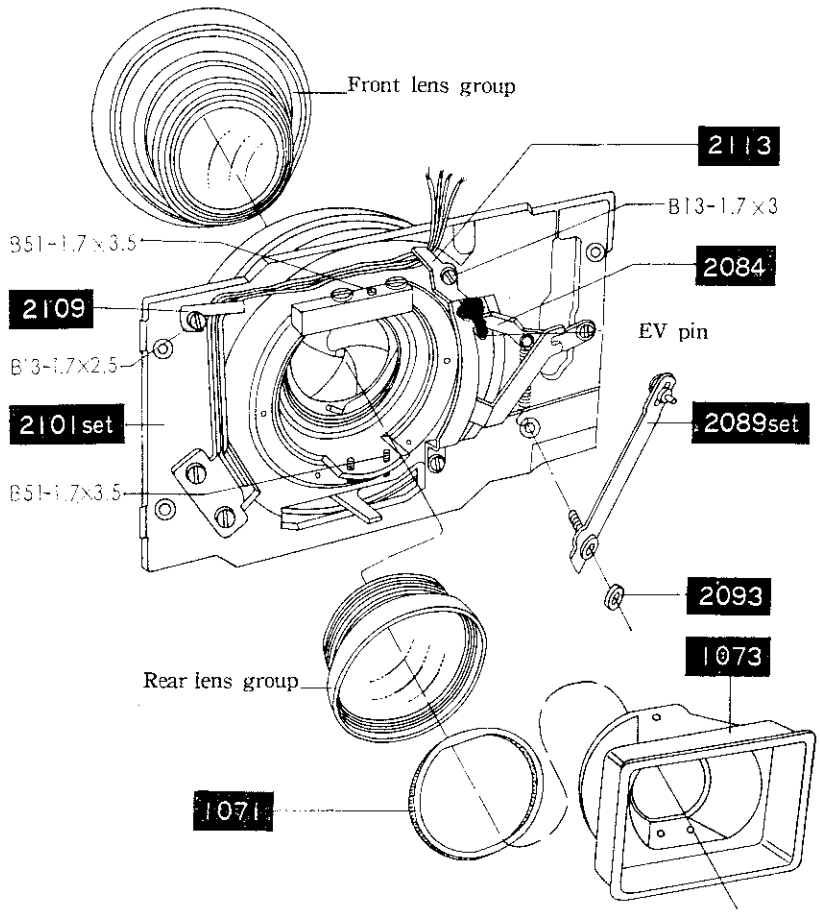
K. Mounting of the front and rear lens groups

1. Clamp the EV lever(2089 set) and the EV axis roller(2093) to the EV ring pin.
2. Fit the four lead wires extending from the shutter mechanism in the groove or grooves provided in the front base frame(2101) for being held in position by means of the cord presser(2109), and then tightened by means of the setscrew(B13-1.7×2.5). Loosen, then, the setscrew(B13-1.7×3) of the pulling lever bearing(2113) and pass the lead wires below the pulling lever bearing and tighten thn setscrew thereof.
3. Overlay the light shield sponge(1071) onto the rear lens group and then hold in position the light shield cover(1073) by means of two setscrews(B51-1.7×3.5) at the lower portion and one setscrew(B51-1.7×3.5) at the upper portion.
4. Mount the front lens group.

Check points to be confirmed after mounting.

* The iris pulling lever(2084) must be actuated ligtly and the tip end of the pulling lever must be positioned over or above or on the EV axis roller(2093).
* The upper side of the light shield cover(1073) is the part thereof where the width of bending is larger. The movement of the helicoid must be effected very smoothly. In case of not smooth movement, the adjustment can be accomplished by the magnitudes of tightening force of two lower setscrews (B51-1.7×3.5) and one upper setscrew (B51-1.7×3.5).

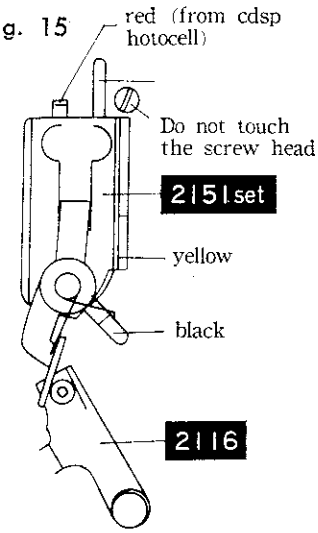
Fig. 14



L. Reassembling of the outer fitting of thelens barrel

1. Fit or mount the diaphragm ring(2126) and the shutter speed ring(2127) put on the front cover plate(249008) of the shutter and insert into the grooves of the diaphragm ring(2126) and the shutter speed ring(2127) the lock lever(2116) fixed to the filter ring (2115) and also pass through these grooves four lead wires. Hold in position the filter ring(2115) by tightenig two setscrews(B11-2×2.5) and one screw stopper(9108)·
2. Three out of four lead wires are connected to corresponding lugs of the switch holder(2151) repectively and the remaining lead wire to the CdS photocell portion by soldering.
3. Fit the vynyl pipe(4039)over the lead wire extending from the CdS holder (4102), and one of them is solde ed to the lead wire extending from the shutter and the other to the switch holder(2151). Hold the lead wires by means of the CdS cord press(4112) and hold them in position by tightening the cord presser setscrew(9107). Fit or mount the switch knob cover(2121) as it is set to OFF position, and fit the CdS holder (4102) into the filter ring(2115) and tighten the switch knob cover(2121) by means of the accessory nut ring (2120). Mount or fit forcibly from the front end the light shield ring(2122).

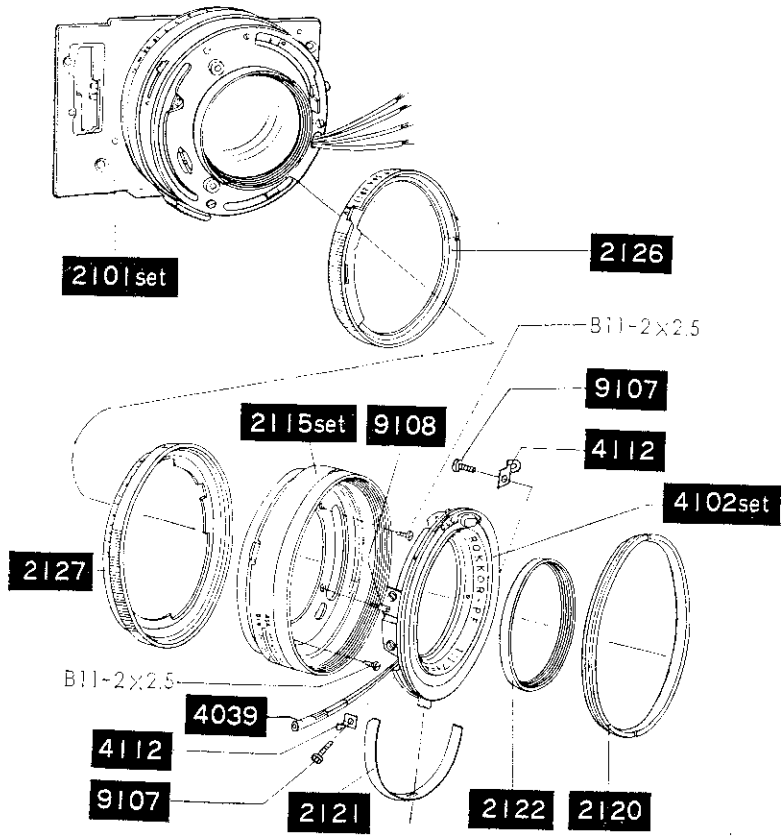
Fig. 15



Caution: *Each of lead wires must not be in contact with the moving elements such as the lock lever(2116), the diaphragm ring(2126), ect;

* When the photocell member is assembled, care should be taken not to hold the lead wire.
* Soldering to the switch holder(2151) must be finished as soon as possible. Care should be take that the solder applied to the yellow lead wire must not be accumulated so high. The soldered portion must not contact with the CdS photocell member.
* The switch knob cover(2121) is so located that its wider section is caused to face the body side, and is fitted into the inner recess of the filter ring(2115).

Fig. 16



M. Mounting of the film take-up spool

1. Mount the film signal axis(3232) into the body, insert or clamp the coupling washer (E1-2) and hold in position the film signal lever(3231) by tightening she setscrew(B13-1.4×1.8) and then applying paste thereon. The longer portion of the signal lever spring (3235) is to be engaged with the film signal lever(3231) while the other portion thereof with the counter base plate(3201).
2. Apply grease and mount into the camera body the take-up spool(3016 set). Insert from below of the camera body the winding shaft(3001 set). Mount a few adjusting washers and the winding bush stopper(3006) from the upper side of the winding shaft(3001) and hold them in position by tightening the setscrew(B31-2×2.5s).
3. Insert the returning spring(3018) from the upper side of the winding shaft(3001) and mount the returning spring setscrew-A (3019) from the same direction of the setscrew of the stopper(3006) so as to hang up with one end of the returning spring(3018). The other end of the spring(3018) is wound approximately two and a half rounds in the clockwise direction and is fitted into the body boss with the full strength of the spring and held in position by means of the spring setscrew(9102).

Caution : When securing the film signal lever(3231) by means of a setscrew, the signal lever must not be mounted in an inclined state.

Fig. 17

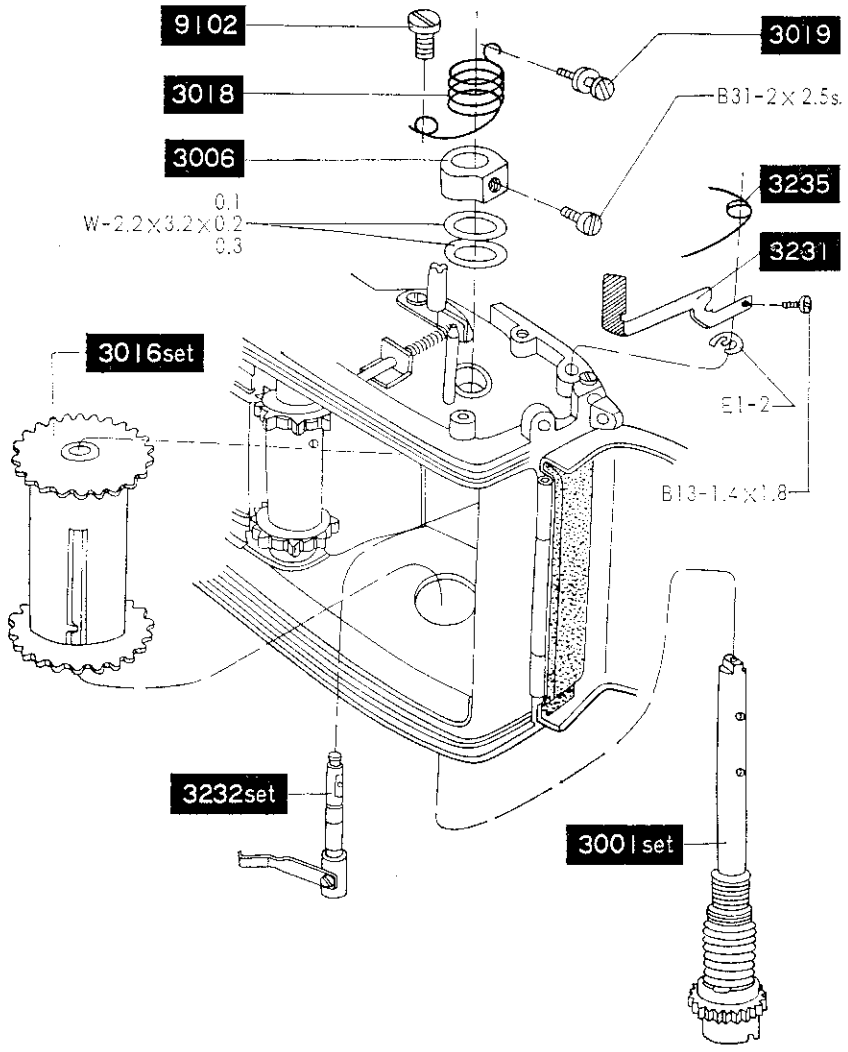


Fig. 18

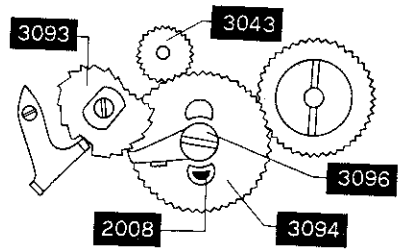
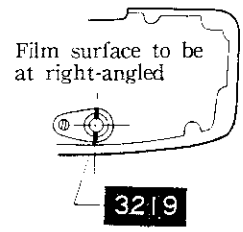


Fig. 19



N. Reassembly of the Helicoid base plate

1. The helicoid base plate is assembled in the camera body which in this instance must be winding up position.
2. Fix the shutter release ring(2131) is fitted over the release pin (2011) which is set on the camera body side. The lever spring(2086) is hooked by the spring receiver of the roller plate(2083) of the shutter axis(2008) and then the helicoid base plate is held in position by tightening four setscrews(B13-2×5s).
3. When the adjustment of focusing, remove and take off the two setscrews(B21-1.7×3.3), the focusing knob(2107), and the distance scale(2106). Set the shutter to B so that the shutter may remain open and rotate in both directions by a suitable turn the helicoid ring (2105) in order to find out a position where the best focusing can obtained and loosen four setscrews(B61-1.7×2s) then, rotate the helicoid ring(2105) to the infinity (∞) stop position, and tighten the said four setscrews (B61-1.7×2s) securely.
4. Fit the distance scale(2106) into the helicoid ring(2105) and cover the distance scale (2106) with the focusing knob(2107). Then hold the helicoid ring(2105) in position by tightening two setscrews(B21-1.7×3.3).

Fig. 20

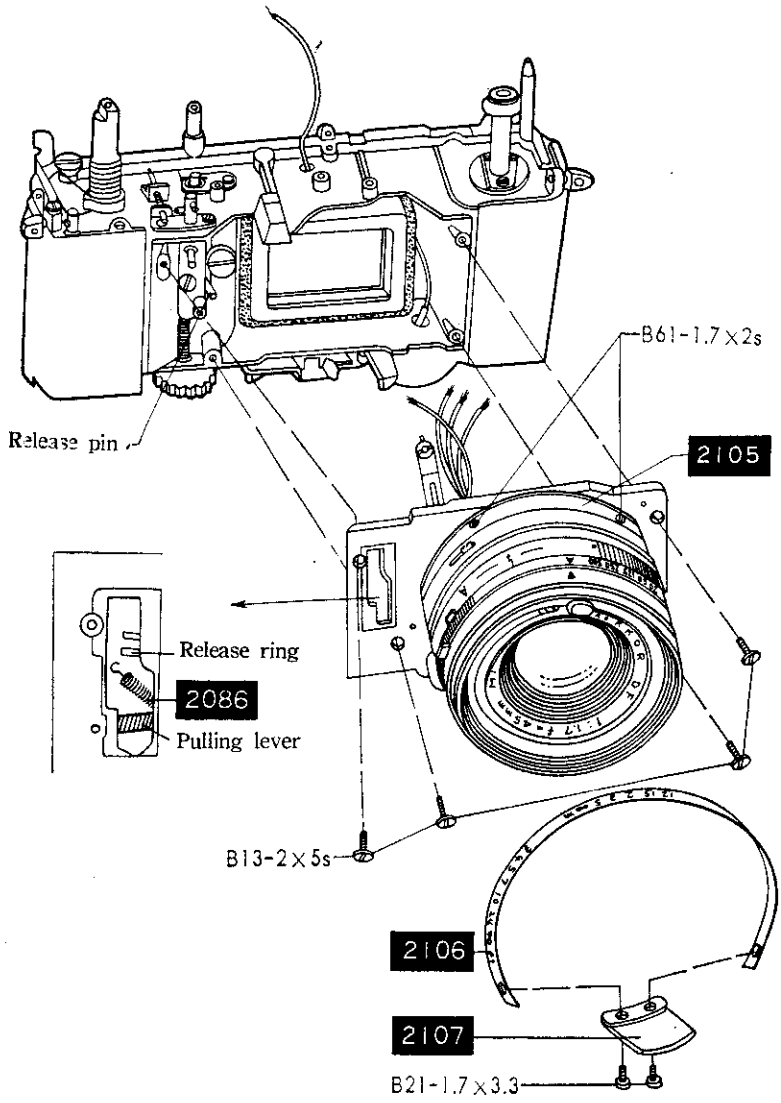


Fig. 21

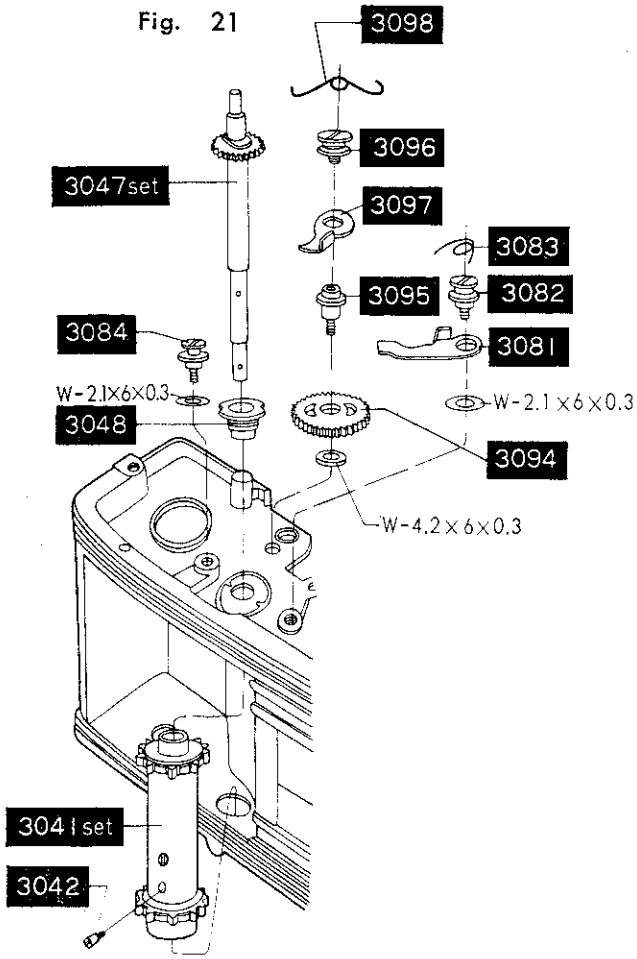
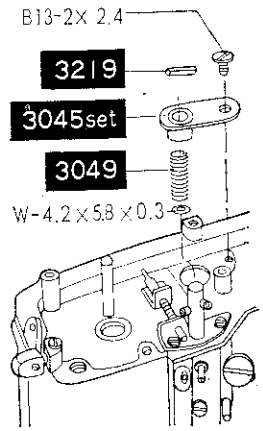

3098
3096
3047set
3097
3083
3095
3082
3084
3081
W-2.1×6×0.3
W-2.1×6×0.3
3048
3094
W-4.2×6×0.3
3041set
3042

Fig. 22


B13-2X 2.4
3219
3045set
3049
W-4.2×5.8×0.3

O. Mounting of the Sprocket

1. Apply grease to both of the holes of the sprocket(3041) and mount it into the camera body and then tighten the sprocket axis bearing-B(3048).
2. From the lower side of the camera body, fit upwardly the sprocket axis(3047) into the axis bearing-B(3048) and the sprocket(3041).
3. Align the hole of the sprocket (3041) and the screw hole (located on the side where countersinked) of the sprocket(3047), and then tighten them together by means of the axis screw(3042).
4. From the upper side of the sprocket axis(3047), the washer(W-4.2×5.8×0.3), the axis spring(3049) and the sprocket bearing-A holder (3045 set) are mounted in the order mentioned and hold them in position by tightening the setscrew(B13-2×2.4). The rollpin (3219) is fitted into the sprockt axis(3047).
5. Place the lower side of the camera body so as to face upward and then place the washer(W-2.1×6×0.3) from the above of which is tightened by the release lever spring screw(3084). Then, the washer(W-2.1×6×0.3) and the sprocket release lever (3081) are held together by means of the release lever axis (3082). The release lever spring (3083) is fitted into the release lever axis(3082) and the other side thereof is made to engage or clamp with the release lever(3081).
6. Apply a small quantity of grease to the shaft hole of the charge gear(3092) and mount it into the camera body to be held in position by means of the crank lever axis screw (3091). Next, the winding stop lever(3051) is mounted in the body by means of the stop lever axis(3052), over which is fitted the stop lever spring(3053). The other end or side of the stop lever spring(3053) is engaged or clamped by the stop lever(3051). The operation lever(3054) is fixed by means of the operation lever axis(3055). The operation lever spring(3056) is fitted into the lever axis(3055) and the other end or side thereof is engaged with or clamped by the operation lever(3054).
7. Mount and hold in position the washer(W-4.2×5.8×0.3) and the idle gear(3094) by tightening a left hand the idle gear axis(3095). Mount and hold in position the reversal stop lever(3097) by tightening a left hand the reversal lever axis(3096). Thereafter, inset the lever spring(3098) into the lever axis(3096), hook one end thereof to the stop lever (3097) and the other end to the camera body.

Caution : *When it is difficult to insert the rollpin(3219), point the forward end by tongs and insert the part evenly.

* The forward most point of the release lever(3081) is located between the washer (W-2.1×6×0.3) and the release lever spring screw (3084). In this case, the actuation of the release lever(3081) must be smooth.
* The idle gear(3094) must be fixed in the fixed direction in such a manner that when the rollpin(3219) is placed at a right angle with respect to the body with the winding stop lever(3051) being fitted into the groove of the charge gear plate(3093), either of the holes of the idle gear(3094) must be so aligned that the shutter axis(2008) may be seen at the centerthrough the opening of the camera body. (See Fig. 18, 19)

P. Reassembly of the Exposure meter, Range-finder, and counter base plate

1. Draw out four lead wires extending from the shutter mechanism out of the camera body after the body is fitted together. Mount the exposure meter upon the camera body and fit into the joint lever pin bush(4019) the EV lever pin(2091). Engage with or clamp the operation lever(4009) to the operation lever screw(9105), and then pull down quietly the exposure meter to be held in position by tightening the support axis(3223) and the setscrew(B13-2×5).
2. Solder and secure fixedly four lead wires(yellow, red, blue and black) to the teemporarily fixed semi-fixing resistor respectively. (See Fig. 24)
3. Set focusing to a short distance or range and fix the range finder base plare set(finished product) to the camera body. In this case, it is recommended to push the objective lens frame(5002) to right viewed from the upper side of the finished product range finder for easy mounting. If your finger prints are left, wipe them off. Tightening is made by two setscrews(B13-2×5s) and the finder setscrew(5035), which is held in the central hole.
4. Fix the counter base plate(3201 set) by means of one setsrew(B13-2×3) and one setscrew(B13-1.7×3), and the release lever spring(2027) is hooked. The adjustment ofthe counter advancing can be made by bending the counter moving lever(3210) and the reversal lever(3214).

Caution : When the film signal lever(3231) fails to actuate because the lever is mabe contact with the film signal plate(3234), the adjustment or correction may be made by lowering a little the film signal lever.

Fig. 24

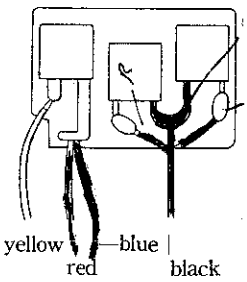


Fig. 25

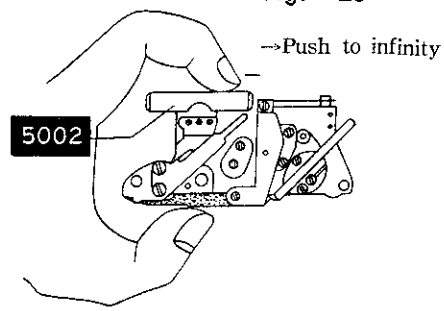
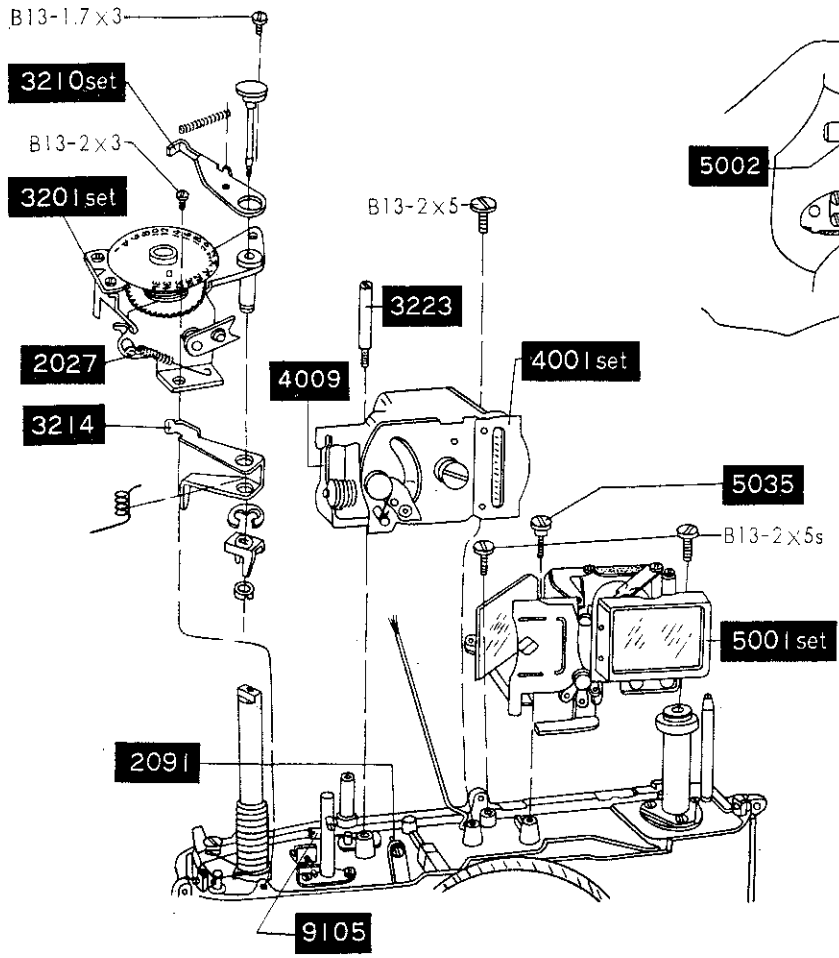


Fig. 23



Q. Reassembly of the top and bottom covers

Reassemble the top cover to the body and check the red position of the film signal lever (3231). Engage the perforations of the test film in the upper and lower teeth or projections of the sprocket and then advance the film two times. Then check if the film signal lever is seen about the length of 3mm. in the window, which is the normal condition. If the lever is over or short, bend and adjust little by little the film signal lever.

1. Fix one lead wire(green) by soldering to the underneath of the accessory clip of the top cover(1002).
2. Insert the shutter button(2001) and the release axis(2003) into the top cover(1002) and place this assembly upon the camera body and hold in position by tightening the top cover nut(1019) and two setscrews(B71-2×2.5).
3. Mount the winding lever washer(3007) and the winding lever(3021).
4. Open the back cover and insert the rewinding shaft(3101) in to the shaft washer(3110). Pass the rewinding shaft(3101) from the inner side and mount the rewinding knob (3101 set) from the upper side.
5. Paste the front cover plate(2112) over the front base frame, and also paste the front leather-L(1006) and the front leather-R(1007).
6. Expose the bottom of the body and locate thereon the tripod socket cover (1014). Fix the bottom cover(1003) by means of two setscrews(B71-2×2.7s).

Check points to be confitmed after reassmbly;

* The position where the shutter release button(2001) releases the shutter must be within the range of 1 mm from the shutter button seat(2002). (See Fig. 21)
* When the winding lever(3009) makes contact with the top cover, adjustment must be made by utilizing washers.
* FM(Flash Matic) check method; Set the shutter speed ring to 1/30 sec. and set the diaphragm ring to G.N. (Guide Number) 28, then see the range-finder and check the exposure needle must be 5.5 when the range is from infinity(∞) to 30 feet. within the mark – ϟ – when range is from 30 feet to 4.5 feet, and 5.5 when the distance or range is from 4.4 feet, to 2.8 feet.

Fig. 26

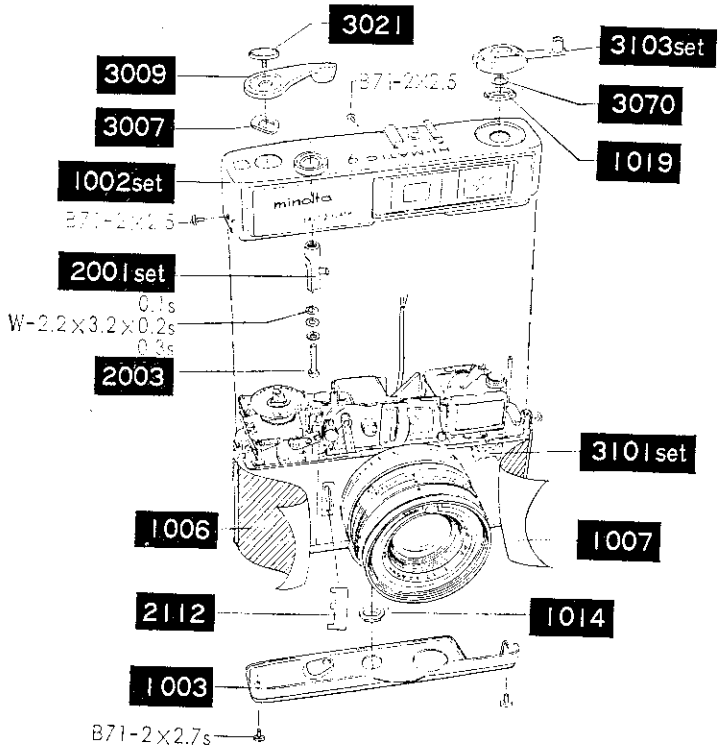
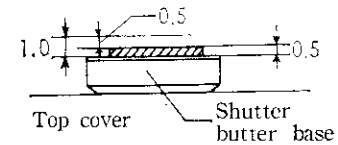



Fig. 27